Notes from the RFQ satellite meeting at the Fairmont Hotel
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Ralph J. Pasquinelli

JPARC RFQ

For the months of December 2008 and January 2009, the RFQ experienced 5.4% downtime. After that period, the RFQ exhibited a peculiar operating mode where 50% of the time was spent conditioning and 50% operational. Many different conditioning scenarios were attempted from three weeks operating to three weeks conditioning, one day commissioning then a day of conditioning, even an hour operations and an hour conditioning. They are considering the addition of a cryo pump to improve vacuum. Alwin Schemp suggested conditioning with a partial pressure of helium at 10^{-5} Torr. This has been used on superconducting cavities, but it was not known if a copper cavity has been tried. Adding view ports was another suggestion.

SNS RFQ

SNS has experienced a resonance control problem as they attempt to increase the duty cycle of the accelerator. The detuning is so severe as to require open loop recovery that takes 10-20 minutes. They also observe 10-20 KWatts of reflected power fluctuations due to various beam-loading conditions. Beam loading also affects resonance control.

Fermilab RFQ

Fermilab's HINS RFQ also exhibits a nonlinear frequency shift as duty cycle is increased. After 20-30 minutes of operation and only 400 watts average power, the frequency shifts downward and can be made to continue downward some 500 KHz. There appears to be a mode mixing as measured by a network analyzer scan between RF pulses. Some suggestions were the path length from hybrid to couplers might cause strange coupling, add thermo couples to the RFQ and input couplers. Cooling of the RF couplers may be inadequate. Many RFQs employ water-cooled couplers. Measure S11 of the couplers by monitoring the forward and reverse powers at the coupler inputs.

SARAF RFQ

The SARAF RFQ operates CW and is the front end of a 40 MeV deuteron accelerator. They have experience arcing on the RFQ rods. Their RFQ vacuum vessel allows for easy access to the RFQ. They also have view ports on all four RFQ quadrants. The repairs to the rod were completed rather easily due to the accessibility of the RFQ.